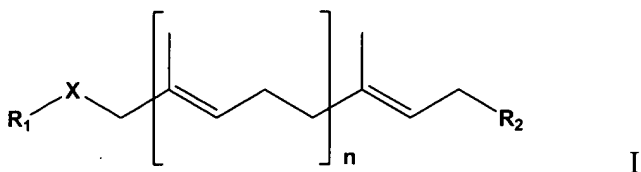


What is claimed is:

1. A compound of formula I:



wherein:

X is independently O or S;

R₁ is a detectable group;

R₂ is independently

OH,

(C₁-C₁₀)alkanoyloxy,

-O-P(=O)(-OR_a)₂,

-O-P(=O)(-OR_a)-O-P(=O)(-OR_a)₂,

-CH₂-O-P(=O)(-OR_a)₂,

-CH₂-O-P(=O)(-OR_a)-O-P(=O)(-OR_a)₂,

-CH₂-P(=O)(-OR_a)₂,

-CH{-P(=O)(-OR_a)₂}₂,

-CH₂-P(=O)(-OR_a)-O-P(=O)(-OR_a)₂,

-CH=CH{-P(=O)(-OR_a)₂}, or

-CH=C{-P(=O)(-OR_a)₂}₂ ;

each R_a is independently hydrogen, (C₁-C₁₀)alkyl, (C₁-C₁₀)alkanoyl,

(C₁-C₁₀)alkanoyloxy, (C₁-C₁₀)alkoxycarbonyl, or -CH₂-O-(C₁-C₁₀)alkanoyl;

n is independently 1, 2, or 3;

or a pharmaceutically acceptable salt thereof.

2. The compound of claim 1 wherein the detectable group is aryl or Het, optionally substituted with one or more substituents independently selected from $-\text{COOR}_b$, $-\text{S(O)}_n\text{NR}_b\text{R}_b$, halo, cyano, nitro, aryl, heterocycle, $(\text{C}_1\text{-C}_{10})$ alkoxy, $(\text{C}_2\text{-C}_6)$ alkenyl, $-\text{C(=O)NR}_b\text{R}_b$, $-\text{OC(=O)NR}_b\text{R}_b$, $-\text{NR}_b\text{R}_b$, or $-\text{S(O)}_n\text{R}_b$, where each R_b is independently hydrogen, $(\text{C}_1\text{-C}_{10})$ alkyl, or $(\text{C}_1\text{-C}_{10})$ alkanoyl.

3. The compound of claim 2 wherein aryl or Het is phenyl, indenyl, naphthyl, anthracenyl, or anthranil, which aryl or Het is optionally substituted with one or more substituents independently selected from $-\text{COOR}_b$, $-\text{S(O)}_n\text{NR}_b\text{R}_b$, halo, cyano, nitro, aryl, heterocycle, $(\text{C}_2\text{-C}_6)$ alkenyl, $-\text{C(=O)NR}_b\text{R}_b$, $-\text{OC(=O)NR}_b\text{R}_b$, $-\text{NR}_b\text{R}_b$, or $-\text{S(O)}_n\text{R}_b$, where each R_b is independently hydrogen, $(\text{C}_1\text{-C}_{10})$ alkyl, or $(\text{C}_1\text{-C}_{10})$ alkanoyl.

4. The compound of claim 1 wherein R_1 is substituted phenyl.

5. The compound of claim 1 wherein R_1 is phenyl substituted with $-\text{COOR}_b$.

6. The compound of claim 1 wherein R_1 is 2-methoxycarboxy phenyl.

7. The compound of claim 1 wherein R_1 is substituted naphthyl.

8. The compound of claim 1 wherein R_1 is naphthyl substituted with a $-\text{S(O)}_n\text{NR}_b\text{R}_b$.

9. The compound of claim 1 wherein R_1 is naphthyl substituted at the 5 – position with a $-\text{S(O)}_n\text{NR}_b\text{R}_b$ substituent.

10. The compound of claim 1 wherein R_1 is 5-N,N'- dimethylaminosulfonyl naphthy-1-yl.
11. The compound of claim 1 wherein R_2 is OH.
12. The compound of claim 1 wherein R_2 is (C₁-C₁₀)alkanoyloxy.
13. The compound of claim 1 wherein R_2 is -O-P(=O)(-OR_a)₂.
14. The compound of claim 1 wherein R_2 is -O-P(=O)(-OR_a)-O-P(=O)(-OR_a)₂.
15. The compound of claim 1 wherein R_2 is -CH₂-O-P(=O)(-OR_a)₂.
16. The compound of claim 1 wherein R_2 is -CH₂-O-P(=O)(-OR_a)-O-P(=O)(-OR_a)₂.
17. The compound of claim 1 wherein R_2 is -CH₂-P(=O)(-OR_a)₂.
18. The compound of claim 1 wherein R_2 is -CH{ -P(=O)(-OR_a)₂ }₂.
19. The compound of claim 1 wherein R_2 is -CH₂-P(=O)(-OR_a)-O-P(=O)(-OR_a)₂.
20. The compound of claim 1 wherein R_2 is -CH=CH{ -P(=O)(-OR_a)₂ }.
21. The compound of claim 1 wherein R_2 is -CH=C{ -P(=O)(-OR_a)₂ }₂.
22. The compound of claim 1 wherein R_a is hydrogen.

23. The compound of claim 1 wherein R_a is $-C(=O)-CH_3$.
24. The compound of claim 1 wherein R_a is $-CH_3$.
25. The compound of claim 1 wherein R_a is $-CH_2-O-(C_1-C_6)\text{alkanoyl}$.
26. The compound of claim 2 wherein R_b is hydrogen.
27. The compound of claim 2 wherein R_b is $-CH_3$.
28. The compound of claim 1 wherein n is 1.
29. The compound of claim 1 wherein n is 2.
30. The compound of claim 1 wherein n is 3.
31. The compound of claim 1 wherein X is $-O-$.
32. The compound of claim 1 wherein X is $-S-$.
33. A pharmaceutical composition comprising a compound as described in claim 1 and a pharmaceutically acceptable diluent or carrier.
34. A method of treating cancer, comprising administering to a mammal afflicted with cancer, an amount of a compound as described in claim 1 effective to treat said cancer.
35. A method of inhibiting a prenylation transferase enzyme or synthase enzyme

comprising contacting the enzyme with an effective amount of a compound as described in claim 1.

36. A method of accessing the metabolic status of an enzyme comprising:
contacting the enzyme with an effective amount of a mixture of a farnesol analog compound and a geraniol or geranylgeraniol analog compound as described in claim 1;
and

measuring the relative ratio of farnesylation to geranylgeranylation of the farnesol and the geraniol or geranylgeraniol analog compounds accomplished by the enzyme.

37. A compound as described in claim 1 for use in medical therapy or diagnosis.

38. The compound of claim 37 wherein the therapy or diagnosis is treating cancer.

39. The use of a compound as described in claim 1 for the manufacture of a medicament useful for the treatment of cancer.

40. The use of a compound as described in claim 1 for the manufacture of a medicament useful for inhibiting prenylation transferase enzymes in a mammal.

41. A protein conjugate comprising a protein linked to a fluorescent fragment of a compound of claim 1.